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BEFORE THE

**Federal Communications Commission**

WASHINGTON, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of )

Amendment of Parts 2 and 15 of the )  
Commission's Rules to Permit Use )  
of Radio Frequencies Above 40 GHz )  
for New Radio Applications )

ET Docket No. 94-124  
RM-8308

To: The Commission

**REPLY COMMENTS  
OF  
THE NATIONAL RURAL TELECOMMUNICATIONS COOPERATIVE**

Pursuant to Section 1.415 of the Rules and Regulations of the Federal Communications Commission ("FCC" or "Commission"), the National Rural Telecommunications Cooperative ("NRTC"), by its attorneys, hereby submits these Reply Comments in connection with the above-captioned proceeding.<sup>1/</sup> NRTC urges the Commission to license the Local Multipoint Distribution Service ("LMDS") as a class of Licensed Millimeter Wave Service ("LMWS") in the 40.5-42.5 GHz ("40 GHz") band.<sup>2/</sup> Allocation of the 40 GHz band to LMDS will allow expanded

<sup>1/</sup> Notice of Proposed Rulemaking, 59 Fed. Reg. 61304 (released November 8, 1994).

<sup>2/</sup> The 40.5-42.5 GHz band could be allocated directly to LMDS using the rules proposed in CC Docket No. 92-927. Notice of Proposed Rulemaking, 8 FCC Rcd 557 (1993).

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use of the 28 GHz band by Fixed Satellite Service ("FSS") providers without harmful interference by LMDS, thereby allowing both LMDS and FSS to develop and serve the American public via two separate and distinct frequency allocations.

## **I. BACKGROUND**

1. NRTC is a non-profit corporation, owned and controlled by 521 rural electric cooperatives and 231 rural telephone systems located throughout 49 states. NRTC's mission is to assist member companies and affiliates in meeting the telecommunications needs of more than 60 million American consumers living in rural areas.

2. Using C-Band technology, NRTC and its Members currently market and distribute packages of satellite-delivered programming, called "RuralTV<sup>®</sup>," to Home Satellite Dish ("HSD") subscribers throughout the country. C-Band distribution technology requires the use of relatively large (6-8') receiving antennas.

3. NRTC also provides high-powered Direct Broadcast Satellite ("DBS") services to rural subscribers across the country. Under an Agreement with Hughes Communications Galaxy, Inc. ("HCG"), NRTC, its Members and affiliated companies currently market and distribute up to 150 channels of popular cable and broadcast

programming ("DirecTV®") to rural households equipped with 18-inch DBS satellite receiving antennas.

4. Through the use of satellite distribution technology, NRTC is committed to extending the benefits of information, education and entertainment programming to rural America -- on an affordable basis and in an easy and convenient manner -- just like those services are available in more populated areas of the country. Using satellite technology, NRTC seeks to ensure that rural Americans receive the same benefits of the information age as their urban counterparts.

## **II. REPLY COMMENTS**

5. Satellite technology is uniquely suited to provide telecommunications services to rural America. Unlike wire services, the cost of satellite service is unrelated to subscriber location. With satellites, the cost of providing access to the most distant, rural subscriber is the same as for an urban dweller.

6. In all likelihood, many of the more remote areas of the country will never be "passed" by cable, nor served by fiber optic systems. Many of these areas, in fact, are deemed "white areas" under the copyright law and are not served even by

over-the-air, terrestrial broadcast systems.<sup>3/</sup> Other terrestrially-based video distribution technologies, such as LMDS, similarly are unlikely to provide comprehensive service to large expanses of rural America.

7. Satellite services, on the other hand, are distance insensitive. Adequate and appropriate spectrum for the provision of satellite services is essential to ensure that rural America receives the benefits of the information age. As Teledesic notes in its Comments, outside the urban areas of the United States and other developing countries, most of the world will receive affordable access to advanced information services only through a satellite-based broadband network.<sup>4/</sup>

8. As a provider of services to rural America, NRTC agrees with Teledesic's assessment that wireline technologies "are really just a further extension of the industrial age paradigm where people are driven by the economics of infrastructure into overcrowded, overburdened urban congregations."<sup>5/</sup> As information becomes increasingly essential to a high quality of life -- including quality education, health care, economic development and public services -- a viable, digital broadband infrastructure becomes a necessity for rural residents.

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<sup>3/</sup> 17 U.S.C. § 119.

<sup>4/</sup> Teledesic Comments, p. i.

<sup>5/</sup> Teledesic Comments, p. ii.

9. As reflected in the Comments submitted in this proceeding, satellite technology is poised to provide advanced services to rural America via the 28 GHz band. Numerous satellite applications have been or will be filed for the 28 GHz band. Hughes SPACEWAY, Teledesic Corp., TRW, Inc., the National Aeronautics and Space Administration (NASA), GE American Communications, Inc. ("GE Americom"), and Rockwell International Corp. have expressed requirements for the Ka-Band. These types of systems offer the means to bring affordable access to two-way switched broadband services to rural and remote parts of the United States that would otherwise remain unserved.

10. In April of 1994, the Commission initiated a negotiated rulemaking proceeding to determine whether co-frequency sharing of the 28 GHz band was possible between the FSS and the proposed LMDS. Despite the diligent efforts of all parties, the Negotiated Rulemaking Committee was unable to reach a viable sharing solution to accommodate all of the competing services at 28 GHz. Instead, it became clear during the course of that proceeding that either satellite services or LMDS -- but not both -- would be viable at 28 GHz.<sup>6/</sup>

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<sup>6/</sup> See Comments of Rockwell International Corp., p. 2; Comments of NASA, p. 4; Comments of Hughes Communications Galaxy, Inc., pp. 2-3.

11. The current proceeding, however, provides an alternative for LMDS-type services at 40 GHz, thereby allowing the 28 GHz band to be used for satellite systems. In this manner, both the LMDS and the satellite industries would be allowed to develop their proposed broadband services without restricting the operations of either service. To resolve the satellite/LMDS conflict at 28 GHz, NRTC encourages the Commission to license the 40.5-42.5 GHz band for terrestrial LMDS-like systems.

12. The 40 GHz band appears to be appropriate for LMDS. HCG submitted a study by engineering consultant Stanford Telecom, which concluded that the 40.5-42.5 GHz band can provide essentially the same performance characteristics that are currently proposed for typical LMDS systems in the 28 GHz band.<sup>7/</sup> Endgate Technology Corp. also noted that propagation effects and characteristics at 40 GHz are similar to those at 28 GHz. Even Avant-Garde Telecommunications, Inc., which has applied for LMDS licenses at 28 GHz and holds licenses in the 38.6-40 GHz band, confirmed that "commercial use of millimeter-waived transmission is practical."<sup>8/</sup>

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<sup>7/</sup> HCG Comments, pp. 2-3, EXHIBIT A; See also, Teledesic Comments, p. iii, APPENDIX A.

<sup>8/</sup> Comments of Avant Garde, p. 2.

13. TRW, a primary developer of electronics equipment and hardware for the millimeter wave bands, likewise stated that the technology driving LMDS at 28 GHz is available at 40 GHz with no appreciable cost difference. TRW even argued that the prospects for terrestrial wideband services are superior at 40 GHz as contrasted to 28 GHz.<sup>9/</sup>

14. NASA also supports the LMDS/LMWS use of the 40 GHz band as a method to resolve the severe incompatibility problems that exist between the FSS and the LMDS in the 27.5-29.5 GHz band. As an expert agency in the development and use of millimeter wave devices for applications in space, NASA's Comments provide strong support for the Commission's proposals for commercial use of the 40.5-42.5 GHz band.

15. As noted by HCG, Rockwell International Corp., Teledesic and other Commenters, transferring the proposed LMDS allocation to the 40.5-42.5 GHz band and licensing FSS in the 28 GHz band also would be consistent with international allocations. The European equivalent of LMDS already is being developed in the 40.5-42.5 GHz band. Allocating LMDS in that same band domestically will allow

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<sup>9/</sup> TRW Comments, pp. 7-8.

U.S. providers and manufacturers to export equipment and services.<sup>10/</sup> Similarly, the 28 GHz band already is allocated internationally for FSS and currently is being used by NASA in foreign FSS systems.<sup>11/</sup>

16. Worldwide FSS systems such as those proposed by Teledesic and HCG promise to be an integral component of the national and global information infrastructure, delivering broadband, high data rate services to remote, unserved, rural areas of the United States, as well as other nations around the world. The Commission should ensure that the 28 GHz band remains available to satellite proponents providing these critical types of services.

17. High data rate communications services available to rural residences and businesses through small receiving antenna promise to ensure that rural Americans are not excluded from the "National Information Highway." These benefits may be lost at 28 GHz if the necessary satellite spectrum is licensed to an incompatible terrestrial service like LMDS. The 28 GHz band is critical to the provision of ubiquitous, distance-insensitive satellite services to rural America, in the

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<sup>10/</sup> See Comments of GE Americom; Comments of HCG, pp. 12-16.

<sup>11/</sup> NASA is currently operating the Advanced Communications Technology Satellite ("ACTS") in the 28 GHz band. Internationally, FSS is deployed in the 28 GHz band by the Italian "Intelsat" and the Japanese "CS-3" and "Superbird." See, Comments of Rockwell International Corp., p. 4, n. 5.



same way wireline technology is critical to the provision of similar services in more populated urban centers.

### **III. CONCLUSION**

18. The great weight of the Comments in this proceeding shows that the Commission's proposal to use the 40.5-42.5 GHz band for LMDS in lieu of the 27.5-29.5 GHz band would result in a rare "win-win" situation for the American public and for American industry. The satellite community would be free to develop the full potential of the Ka-Band as an essential link in the national/global information infrastructure. At the same time, LMDS would be free to develop to its full potential -- without interference from FSS -- in the 40 GHz band. The American public would receive the benefits of both service offerings.

19. As a provider of essential telecommunications services to rural America, NRTC supports the Commission's proposal to allocate the 40.5-42.5 GHz band as a spectrum "home" for LMDS/LMWS. In this manner, the Commission can resolve the satellite/terrestrial sharing issue that has clouded development of the 27.5-29.5 GHz band. The Commission can create a regulatory atmosphere wherein both satellite services and LMDS develop and flourish.

**WHEREFORE, THE PREMISES CONSIDERED**, the National Rural Telecommunications Cooperative urges the Commission to relocate the proposed LMDS service from 28 GHz to 40 GHz.

**Respectfully submitted,**

**NATIONAL RURAL  
TELECOMMUNICATIONS COOPERATIVE**

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